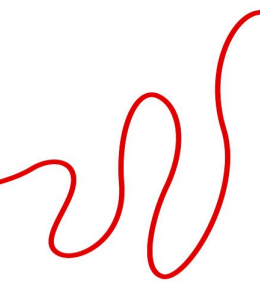




Input of the Dorsal Striatum – A Comparison

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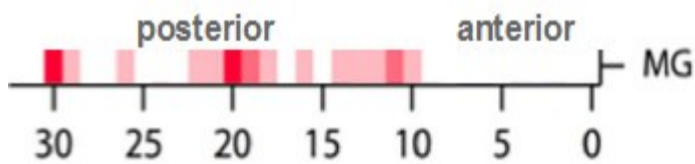


I did a comparison between the Allen Mouse Connectivity Atlas and the results of the article “Inputs to the dorsal striatum of the mouse reflect the parallel circuit architecture of the forebrain” (2010, Frontiers in Neuroanatomy) from Weixing X. Pan, Tianyi Mao and Joshua T. Dudman. They identified 36 different areas which project to the Dorsal Striatum with help of a retrograde marker.

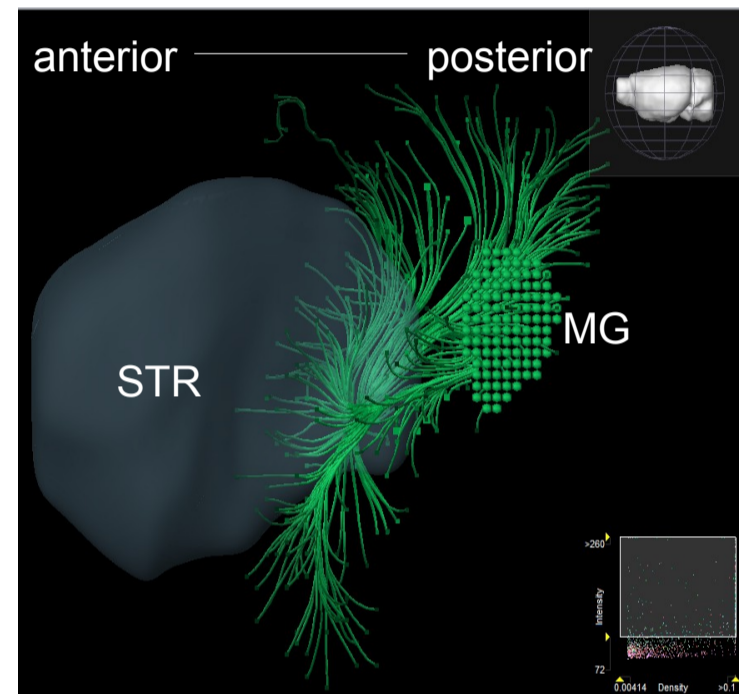
I checked if the anterograde tracing data from the Allen Atlas is able to replicate the results. I found that there is a good fit for most of the areas (26). Only 4 areas have small differences. For 2 areas, the Allen Atlas had no reliable anterograde injections and for 4 areas I could not find the corresponding area in the Allen data because they used a different annotation.

Example of a good fit: The Medial geniculate nucleus (MG)

Pan et al. Found that it projects only to the posterior part of the Dorsal Striatum:



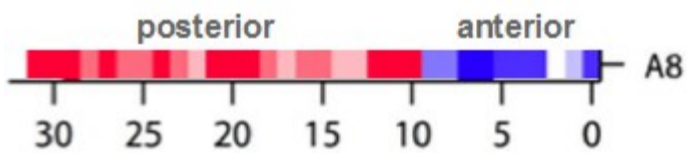
This finding is replicated by the Allen Data.



MG projections in the Allen Atlas.

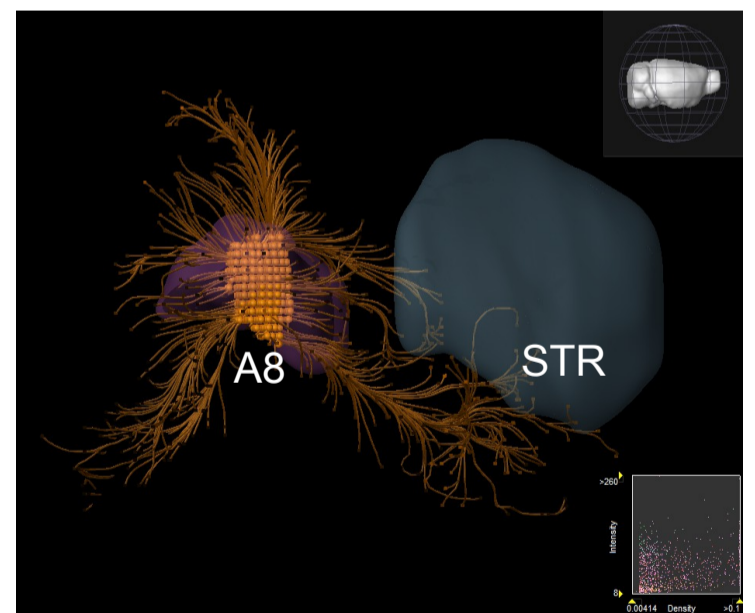
Example of a difference in the trajectory pattern: The Midbrain reticular nucleus (A8)

Pan et al. Found that it projects in all parts of the Dorsal Striatum:



This finding could not be replicated by the Allen data. Only a small subset of A8 connections goes to the Striatum.

One reason for this could be that the injection didn't filled the whole volume of the A8.



A8 projections in the Allen Atlas.

Furthermore, I checked if there are more areas in the Allen Mouse Connectivity that project to the Dorsal Striatum. I found three areas which are not mentioned by Pan et al.: The lateral Entorhinal area (ENTI), the lateral Visual area (VISl) and the Anterovisual area (VISam). Reasons for this could be the usage of different reference Atlases, errors during the labeling or the small sampling size in both studies.

In conclusion, the data from Pan et al. and the Allen Mouse Connectivity Atlas fit in most cases and they support each other. This shows that the Allen Mouse Connectivity Atlas is a good tool to generate initial hypothesis and to validate experimental results.